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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/196,574	11/20/1998	KIRAN CHALLAPALI	PHA-23.540	9299

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EXAMINER

LEE, RICHARD J

ART UNIT

PAPER NUMBER

2613

DATE MAILED: 01/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/196,574	Applicant(s) Challapali et al
	Examiner Richard Lee	Art Unit 2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on Dec 17, 2002

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-16 is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-16 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner. If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some* c) None of:

1. Certified copies of the priority documents have been received.

2. Certified copies of the priority documents have been received in Application No. _____.

3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) Notice of References Cited (PTO-892)

4) Interview Summary (PTO-413) Paper No(s). _____

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

5) Notice of Informal Patent Application (PTO-152)

3) Information Disclosure Statement(s) (PTO-1449) Paper No(s). 20

6) Other:

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1. The request filed on December 17, 2002 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/196,574 is acceptable and a CPA has been established. An action on the CPA follows.
2. The applicants' arguments from the amendment filed November 13, 2002 have been noted and considered, but are deemed moot in view of the following new grounds of rejections.
3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
4. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stenger of record (DE 3608489A1) in view of Katata et al of record (5,815,601) and Woodfill et al (6,215,898).

Stenger discloses a method of improving image segmentation of a video telephone scene as shown in Figures 3 and 4, and substantially the same image processing device and system, method of encoding a stereo pair of images, computer executable process steps to process image data from a stereo pair of images, and apparatus for processing a stereo pair of images as claimed in claims 1-16, comprising substantially the same input which receives a stereo pair of images (see 10 of Figure 3 and 11, 12 of Figure 4); a foreground extractor (13-15 of Figure 4 and see page 4, lines 4-10 of translated article) coupled to the input which compares location of like pixel information in each image to determine which pixel information is foreground pixel information

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and which pixel information is background pixel information, wherein the foreground extractor computes the difference in location of like pixels in each image and selects the foreground pixels as those pixels whose difference in location falls above a threshold distance; wherein the stereo pair of images are received from a stereo pair of cameras spaced closely from one another in a video conference system (see Figure 3); the extracting includes identifying the location of like pixels in each of the stereo pair of images, calculating the difference between the locations of like pixels, and determining for each set of like pixels whether the difference between locations falls above a threshold difference, and if so identifying those pixels as foreground information (see page 4, lines 4-10 of translated article); a memory which stores process steps (i.e., as provided to carry out functions within Figure 4), and a processor which executes the process steps stored in the memory so as to extract foreground information from the stereo pair of images, and if the difference in location is above a set threshold the pixel information is identified as foreground pixel information, if below the set threshold the pixel information is determined to be background pixel information (see page 4, lines 4-10 of translated article);

Stenger does not particularly disclose, though, the followings:

(a) a DCT block classifier coupled to the foreground extractor which determines which DCT blocks of at least one of the images contain a threshold amount of foreground information; and an encoder coupled to the DCT block classifier which encodes the DCT blocks having the threshold amount of foreground pixel information with a first level of quantization and which encodes the DCT blocks having less than the threshold amount of foreground information as

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background information at a second lower quantization level, the encoder encodes the foreground pixel information at a first high level of quantization and which encodes background pixel information at a second lower level of quantization, wherein the encoding step encodes the entire 8 x 8 block of DCT coefficients at the first higher quantization level if the 8 x 8 block of DCT coefficients contains the predetermined amount of foreground pixel information as claimed in claims 1, 4, 7, 8, 11, 12, and 14-16;

(b) wherein the foreground pixel information is defined in terms of entire 8 x 8 blocks of DCT coefficients, wherein the encoding step encodes an entire 8 x 8 block of DCT coefficients as foreground information if at least a predetermined number of foreground pixels are within the 8 x 8 block, otherwise the entire 8 x 8 block of DCT coefficients is encoded as background information as claimed in claims 6 and 10; and

(c) wherein at least a majority of a bandwidth is encoded at the first quantization level and the first high/higher level of quantization as claimed in claims 1, 4, 7, 8, 11, and 14.

Regarding (a) and (b), Katata et al discloses an image encoder as shown in Figure 1, and teaches the conventional use of a DCT block classifier (i.e., within 106 of Figure 1, and see column 5, lines 1-4) coupled to a foreground extractor (i.e., 101, 102 of Figure 1 and see column 4, line 45 to column 5, line 4) for determining which DCT blocks of at least one of the images contain a threshold amount of foreground information; an encoder (i.e., within 106 of Figure 1, and see column 5, lines 1-4) coupled to the DCT block classifier which encodes the DCT blocks having the threshold amount of foreground information with a first level of quantization and

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which encodes the DCT blocks having less than the threshold amount of foreground information as background information (i.e., background information is being provided by the threshold 15 of Figure 4 of Stenger et al) at a second lower quantization level (see column 1, lines 12-25, columns 7-8), the encoder encodes the foreground pixel information at a first high level of quantization and which encodes background pixel information at a second lower level of quantization (see column 1, lines 12-25, columns 7-8), wherein the encoding step encodes the entire 8 x 8 block of DCT coefficients at the first higher quantization level if the 8 x 8 block of DCT coefficients contains the predetermined amount of foreground pixel information (see column 1, lines 12-58, columns 7-8); wherein the foreground pixel information is defined in terms of entire 8 x 8 blocks of DCT coefficients, wherein the encoding step encodes an entire 8 x 8 block of DCT coefficients as foreground information if at least a predetermined number of foreground pixels are within the 8 x 8 block, otherwise the entire 8 x 8 block of DCT coefficients is encoded as background information (see column 1, lines 12-58, columns 7-8). Therefore, it would have been obvious to one of ordinary skill in the art, having the Stenger and Katata et al references in front of him/her and the general knowledge of stereo image processings within videophone environments, would have had no difficulty in providing the DCT block classifier and an encoder for providing different quantization level processings for foreground and background image data as taught by Katata et al for the stereo image videophone system within Stenger for the same well known image compressions purposes as claimed.

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Regarding (c), it is noted that Katata et al does teach the particular finer quantization for areas of interest, such as the facial region (i.e., foreground data, see column 1, lines 12-25, column 4, lines 45-61, column 5, lines 5-20, column 7, line 26 to column 8, line 23, column 9, line 36 to column 10, line 13, Figures 1, 13, 14b, 17). It is well recognized in the art that finer quantization requires more bandwidth. And though Katata is silent as to where a majority of the bandwidth is encoded, it is nevertheless considered obvious that a majority of a bandwidth is encoded for the foreground data (i.e., facial region) since a finer quantization level is required. In any event, Woodfill et al discloses a data processing system and teaches the conventional allocation of a majority of bandwidth for foreground information over background information (see column 123, lines 34-49). Therefore, it would have been obvious to one of ordinary skill in the art, having the Stenger, Katata et al, and Woodfill et al references in front of him/her and the general knowledge of foreground/background encoding of video data, would have had no difficulty in using the particular majority of bandwidth allocation for foreground data as taught by Woodfill et al to provide a majority of a bandwidth to be encoded at the first quantization level and the first high/higher level of quantization for the foreground data of Katata et al and Stenger for the same well known image quality control and bandwidth allocation control purposes as claimed.

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5. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stenger of record (DE 3608489A1) in view of Katata et al of record (5,815,601) and Monro et al (6,078,619).

Stenger discloses a method of improving image segmentation of a video telephone scene as shown in Figures 3 and 4, and substantially the same image processing device and system, method of encoding a stereo pair of images, computer executable process steps to process image data from a stereo pair of images, and apparatus for processing a stereo pair of images as claimed in claims 1-16, comprising substantially the same input which receives a stereo pair of images (see 10 of Figure 3 and 11, 12 of Figure 4); a foreground extractor (13-15 of Figure 4 and see page 4, lines 4-10 of translated article) coupled to the input which compares location of like pixel information in each image to determine which pixel information is foreground pixel information and which pixel information is background pixel information, wherein the foreground extractor computes the difference in location of like pixels in each image and selects the foreground pixels as those pixels whose difference in location falls above a threshold distance; wherein the stereo pair of images are received from a stereo pair of cameras spaced closely from one another in a video conference system (see Figure 3); the extracting includes identifying the location of like pixels in each of the stereo pair of images, calculating the difference between the locations of like pixels, and determining for each set of like pixels whether the difference between locations falls above a threshold difference, and if so identifying those pixels as foreground information (see page 4, lines 4-10 of translated article); a memory which stores process steps (i.e., as provided to

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carry out functions within Figure 4), and a processor which executes the process steps stored in the memory so as to extract foreground information from the stereo pair of images, and if the difference in location is above a set threshold the pixel information is identified as foreground pixel information, if below the set threshold the pixel information is determined to be background pixel information (see page 4, lines 4-10 of translated article);

Stenger does not particularly disclose, though, the followings:

(a) a DCT block classifier coupled to the foreground extractor which determines which DCT blocks of at least one of the images contain a threshold amount of foreground information; and an encoder coupled to the DCT block classifier which encodes the DCT blocks having the threshold amount of foreground pixel information with a first level of quantization and which encodes the DCT blocks having less than the threshold amount of foreground information as background information at a second lower quantization level, the encoder encodes the foreground pixel information at a first high level of quantization and which encodes background pixel information at a second lower level of quantization, wherein the encoding step encodes the entire 8 x 8 block of DCT coefficients at the first higher quantization level if the 8 x 8 block of DCT coefficients contains the predetermined amount of foreground pixel information as claimed in claims 1, 4, 7, 8, 11, 12, and 14-16;

(b) wherein the foreground pixel information is defined in terms of entire 8 x 8 blocks of DCT coefficients, wherein the encoding step encodes an entire 8 x 8 block of DCT coefficients as foreground information if at least a predetermined number of foreground pixels are within the 8 x

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8 block, otherwise the entire 8 x 8 block of DCT coefficients is encoded as background information as claimed in claims 6 and 10; and

(c) wherein at least a majority of a bandwidth is encoded at the first quantization level and the first high/higher level of quantization as claimed in claims 1, 4, 7, 8, 11, and 14.

Regarding (a) and (b), Katata et al discloses an image encoder as shown in Figure 1, and teaches the conventional use of a DCT block classifier (i.e., within 106 of Figure 1, and see column 5, lines 1-4) coupled to a foreground extractor (i.e., 101, 102 of Figure 1 and see column 4, line 45 to column 5, line 4) for determining which DCT blocks of at least one of the images contain a threshold amount of foreground information; an encoder (i.e., within 106 of Figure 1, and see column 5, lines 1-4) coupled to the DCT block classifier which encodes the DCT blocks having the threshold amount of foreground information with a first level of quantization and which encodes the DCT blocks having less than the threshold amount of foreground information as background information (i.e., background information is being provided by the threshold 15 of Figure 4 of Stenger et al) at a second lower quantization level (see column 1, lines 12-25, columns 7-8), the encoder encodes the foreground pixel information at a first high level of quantization and which encodes background pixel information at a second lower level of quantization (see column 1, lines 12-25, columns 7-8), wherein the encoding step encodes the entire 8 x 8 block of DCT coefficients at the first higher quantization level if the 8 x 8 block of DCT coefficients contains the predetermined amount of foreground pixel information (see column 1, lines 12-58, columns 7-8); wherein the foreground pixel information is defined in terms of entire 8 x 8 blocks of DCT

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coefficients, wherein the encoding step encodes an entire 8 x 8 block of DCT coefficients as foreground information if at least a predetermined number of foreground pixels are within the 8 x 8 block, otherwise the entire 8 x 8 block of DCT coefficients is encoded as background information (see column 1, lines 12-58, columns 7-8). Therefore, it would have been obvious to one of ordinary skill in the art, having the Stenger and Katata et al references in front of him/her and the general knowledge of stereo image processings within videophone environments, would have had no difficulty in providing the DCT block classifier and an encoder for providing different quantization level processings for foreground and background image data as taught by Katata et al for the stereo image videophone system within Stenger for the same well known image compressions purposes as claimed.

Regarding (c), it is noted that Katata et al does teach the particular finer quantization for areas of interest, such as the facial region (i.e., foreground data, see column 1, lines 12-25, column 4, lines 45-61, column 5, lines 5-20, column 7, line 26 to column 8, line 23, column 9, line 36 to column 10, line 13, Figures 1, 13, 14b, 17). It is well recognized in the art that finer quantization requires more bandwidth. And though Katata is silent as to where a majority of the bandwidth is encoded, it is nevertheless considered obvious that a majority of a bandwidth is encoded for the foreground data (i.e., facial region) since a finer quantization level is required. In any event, Monro et al discloses an object oriented video system and teaches the conventional use of a bit rate manager 42 of Figure 1 for allocation of a majority of bandwidth for foreground information over background information (see column 2, lines 55-63, column 5, lines 30-37,

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column 6, lines 7-17). Therefore, it would have been obvious to one of ordinary skill in the art, having the Stenger, Katata et al, and Monro et al references in front of him/her and the general knowledge of foreground/background encoding of video data, would have had no difficulty in using the particular majority of bandwidth allocation for foreground data as taught by Monro et al to provide a majority of a bandwidth to be encoded at the first quantization level and the first high/higher level of quantization for the foreground data of Katata et al and Stenger for the same well known image quality control and bandwidth allocation control purposes as claimed.

6. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314, (for formal communications intended for entry)

(for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,
Arlington, VA., Sixth Floor (Receptionist).

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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Lee whose telephone number is (703) 308-6612. The Examiner can normally be reached on Monday to Friday from 8:00 a.m. to 5:30 p.m., with alternate Fridays off.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group customer service whose telephone number is (703) 306-0377.



RICHARD LEE
PRIMARY EXAMINER

Richard Lee/rl

1/22/03